An Overview of the 2012 Energy Code

The 2012 International Energy Conservation Code will require new dwellings built in Frederick County to have more insulation, a tighter envelope, tighter ducts, better windows, and more efficient lighting than the 2009 code.

Please note that by State Law Frederick County cannot amend the provisions of the IECC to be less stringent than as adopted by COMAR.

Here is a summary of the important changes to the 2012 International codes for residential builders in Frederick County:

- **Chapter 11 of the IRC vs. the IECC.** The 2012 IRC still includes energy efficiency requirements in Chapter 11. However, these requirements are now identical to the residential provisions found in the 2012 IECC. In essence, chapter 11 of the IRC is just a reprint of the applicable sections of the 2012 IECC. Until this round of code revisions any builder who wanted to follow the performance path (rather than the prescriptive or component-tradeoff path) had to use the IECC, since the IRC didn't include a performance path option. The fact that there were two parallel energy codes — one in the IRC, and one in the IECC — was confusing to many builders. While the two codes were aligned on most matters, they occasionally conflicted, further adding to confusion. The 2012 code revisions have simplified the situation since the IRC now mirrors the requirements of the IECC.

- **Wall and Ceiling insulation requirements have become more stringent.** In Table 402.1.1, the 2012 IECC ratchets up minimum prescriptive insulation levels required in Frederick County:

  - The minimum ceiling R-value has been increased from R-38 to R-49.

  - The minimum R-value for above-grade walls has been increased from R-13 to R-20 (or R-13 with an additional layer of R-5 continuous insulation).

  The table includes the following footnote explaining the wall R-value requirements that include a "plus" sign. The first value is cavity insulation, the second is continuous insulation or insulated siding, so '13+5' means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40 percent or less of the exterior, continuous insulation R-value shall be permitted to be reduced by no more than R-3 in the locations where structural sheathing is used – to maintain a consistent total sheathing thickness."

  Most builders in Frederick County will find that the easiest compliance option will be to include R-5 or better foam insulation on the exterior of a 2 x 4 wall. To meet R-5, builders will need at least 1.5 inch of EPS, 1 inch of XPS, or 3/4 inch of polyisocyanurate. To meet R-10, builders will need at least 3 inches of EPS, 2 inches of XPS, or 1.5 inch of polyiso.

  As indicated above, the builder still has the option to do a performance based analysis by using a program such as REScheck.

- **Duct tightness requirements have become more stringent.**

  Like the 2009 codes, the 2012 IECC requires duct leakage testing unless the duct system is located entirely inside of the home's thermal envelope. The new code has increased the stringency of the duct leakage thresholds.

  The code permits builders to test a duct system in one of the following ways:

  1a. One option is a so-called "rough-in" test *before* the air hander is installed. While the 2009 code had a threshold of 4 cfm per 100 square feet of conditioned floor area for this test, the 2012 code has lowered this threshold to 3 cfm.

  1b. Another option is a so-called "rough-in" test *after* the air handler is installed. While the 2009 code had a threshold of 6 cfm per 100 square feet of conditioned floor area for this test, the 2012 code has lowered this threshold to 4 cfm.

  2. The third option is a so-called "post-construction" test. While the 2009 code had a threshold of 12 cfm per 100 square feet of conditioned floor area for this test, the 2012 code has lowered this threshold to 4 cfm.

  The bottom line: get out your tub of mastic, and seal everything well.

- **Blower-door testing requirements are now mandatory and air-sealing checklist requirements have become more stringent.**

  The 2009 International codes included provisions to improve the air tightness of new homes. Builders were given two compliance options: either follow a checklist of measures or have the home tested with a blower door. The new 2012 code doesn't give builders a choice anymore; builders now have to comply with *both* the checklist requirements and the requirement to conduct a blower-door test. The air-sealing checklist in the 2012 IECC is called Table R402.4.1.1, "Air Barrier and Insulation Installation." The 2012 table is based on the earlier checklist (2009 IECC, Table 402.4.2); however, the 2012 version is written in mandatory language, and a few ambiguities in the earlier table have been cleared up.

  Once you have completed the air-sealing checklist, you still need to conduct a blower-door test.

  According to section R402.4.1.2 of the 2012 IECC, "The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 3 air changes per hour in Frederick County. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals).

  Frederick County will require that testing be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the County. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope."

- **All new homes in Frederick County will be required to have a whole-house mechanical ventilation system.**

  Although the 2012 IECC includes provisions to improve a home's air tightness, it is silent on the question of whether new homes need mechanical ventilation systems. However, the 2012 IRC *does* include requirements for mechanical ventilation. Any new home built in Frederick County must include a whole-house ventilation system complying with requirements listed in 2012 IRC sections R303.4 and M1507.3. Note that the whole-house ventilation system requirements in the 2012 IRC refer to two tables, Table M1507.3.3 (1) and Table M1507.3.3 (2).

- **High-efficacy lamps**

  In section R404.1, the 2012 IECC requires that "a minimum of 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps." The percentage has been raised from 50% in the 2009 code.

  The code defines a high-efficacy lamp as either:

  - A compact fluorescent lamp (CFL);
  - A T8 or smaller linear fluorescent lamp; or
  - Any lamp meeting the following minimum efficiency requirements: 60 lumens per watt for lamps over 40 watts, 50 lumens per watt for lamps over 15 watts but no more than 40 watts, and 40 lumens per watt for lamps rated at 15 watts or less.

  This definition excludes incandescent light bulbs. High-efficacy lamps are allowed to have any type of base; screw-base (Edison-base) lamps comply with the new code.

- **In Frederick County window glazing U-factor and solar heat gain coefficient (SHGC) requirements have been changed.** The maximum window U-factor changes from U-0.40 to U-0.35. Window SHGC is also regulated for the first time. The maximum permissible SHGC in Frederick County is 0.40. Prescriptive requirements for glazing U-factor and glazing SHGC are found in Table 402.1.1 of the 2012 IECC

- **New pipe insulation requirements**

  The 2012 IECC includes new requirements for R-3 or better pipe insulation on most types of hot-water pipes.

Other significant changes in the 2012 IRC:

- Section R302.5.1 now requires that the door between the attached garage and house be equipped with a self-closing device.

- Section R602.12 offers a simplified prescriptive method for wall bracing procedures.

- Section R501.3 requires that floor assemblies shall be protected by a ½" gypsum wallboard membrane or equivalent with the following exceptions:

    - The floor is located directly over a space protected by sprinklers.

    - Floor assemblies located directly above a crawl space with no storage or fuel fired equipment.

    - The floor assemblies are constructed with dimensional or composite lumber with a minimum nominal dimension of 2 x 10.

  In Frederick County these requirements should primarily apply to non-sprinklered additions with basements.